



## COMPONENTS NEWS

### NEW NVIDIA CHIP?

Nvidia's next graphics chip, the G70, is rumoured to be called the GeForce 7800 and is expected to use a 90nm process. It's anticipated that GTX, GT and Standard models of the card will have been launched by the time you read this. The GTX version will be the only card to support SLI. Current rumours suggest that the G70 will have a 430MHz core with 256MB of 1.4GHz GDDR3 memory. We'll bring you more details when the card is released.

### ATI MULTIVPU

With Nvidia's SLI technology allowing PCs to use two graphics cards together, it was only a matter of time before ATI launched a rival technology. Official information was not available as we went to press, but some details have leaked out.

Rather than use two identical cards like nVidia, ATI's system will use a master and slave card. The master will be a brand new card, while the slave can be an existing X800 or X850-based card. The connection that joins the cards together will be made outside the PC case. We'll bring you full details as soon as they're available.

▶ ATI is working on a rival technology to nVidia's SLI



### REVIEW BAREBONES PC

## MSI Mega PC 865 Pro

RATING ★★★★★

PRICE £232 inc VAT

SUPPLIER [www.komplett.co.uk](http://www.komplett.co.uk)

DETAILS [www.msi.com.tw](http://www.msi.com.tw)

MSI's Mega PC 865 Pro comes with everything you need to build a home entertainment system. The attractive chassis has much in common with a hi-fi, including a large volume control and playback buttons, which glow orange.

A large LCD panel displays playback information as you play a DVD or MP3, but you have to install the bundled software for it to work. MEGA Instant On lets you boot into the Linux-based playback software in seconds by pressing the AV button on the case. With the IR receiver built into the case, you can control playback from your favourite armchair using the bundled remote.

If you'd rather use Windows, press the PC button and use InterVideo's Home Theatre 2.5, which offers Media Center-like functions through the bundled remote control. You'll need the optional TV tuner card if you want to record TV programmes. However, Home Theatre doesn't have an Electronic Programming Guide (EPG) and is easier to use with pre-recorded content.

As well as an entertainment system, the Mega PC 865 Pro is also a regular PC. Strangely, MSI has opted for the older Intel 865 chipset rather than the newer 915. This means that the fastest processor the Mega PC supports is an LGA775 3.4GHz Pentium 4, while graphics are powered by the underwhelming Intel Extreme 2 chipset. However, these can be upgraded through the spare AGP slot, leaving a single PCI slot for further expansion. Performance using a 3.4GHz Pentium 4 and 1GB of RAM returned good scores of 144 in our *Shopper*

EXCLUSIVE



application benchmarks and 4,949 in PCMark04.

Installing components is very easy. The drive bay, which houses the optical drive and hard disk, simply unclips and lifts out, allowing access to the processor slot. MSI provides a heat sink with heat pipes and a quiet fan, which screws into the board. We could barely hear it when the PC was on.

Other than the processor and memory there's little to install, as the Mega PC comes with mini-PCI 802.11g WiFi and a seven-in-one memory card reader hidden under a front flap.

Although we found the use of the 865 chipset strange, the Mega PC 865 Pro is well priced. With the excellent LCD, remote and software it makes a superb DIY media PC.

David Ludlow

✓ Comes with media software and LCD

✗ Uses the older Intel 865 chipset

**SPECIFICATIONS** Intel 865G chipset, supports LGA775 processors (up to 3.4GHz), 2 DDR DIMM slots, 1 PCI, 1 AGP, 5.1 onboard sound, 802.11g WiFi, Ethernet, 7-in-1 memory card reader, MEGA Instant On and InterVideo Home Theatre software. Part code MEGA 865 PRO

### HOTLIST GRAPHICS CARD

## GE CUBE X800 XL

RATING ★★★★★

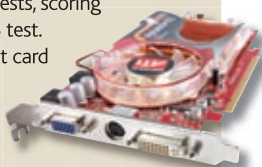
PRICE £205 inc VAT

SUPPLIER [www.sphinxcomputers.com](http://www.sphinxcomputers.com)

DETAILS [www.gecube.com](http://www.gecube.com)

Based on ATI's Radeon X800 XL chip, GeCube's graphics card perfectly balances price against performance. With 16 pixel pipelines, a 500MHz core speed and 1GHz of GDDR3 memory, it has fantastic specifications. These shone through in our tests, scoring 61.4fps in our Doom 3 test.

This is an excellent card for those that want high-end performance without the huge cost.



**SPECIFICATIONS** ATI Radeon X800 XL, 256MB GDDR3 memory, PCI-E x16 interface, TV out (composite, component and S-video). Part code VC26057

### HOTLIST PROCESSOR

## INTEL Pentium 4 550

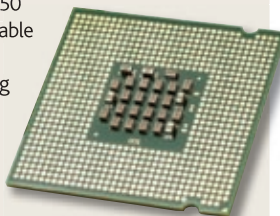
RATING ★★★★★

PRICE £181 inc VAT

SUPPLIER [www.pcnextday.co.uk](http://www.pcnextday.co.uk)

DETAILS [www.intel.com](http://www.intel.com)

The Pentium 4 550 runs at a respectable clock speed of 3.4GHz, providing ample raw power, and is particularly strong at video compression. The processor will work with any LGA775 motherboard, which also means you can use the latest DDR2 memory and PCI-E graphics cards.



**SPECIFICATIONS** 3.4GHz clock speed, LGA775 connector, 800MHz front side bus. Part code BX8-547PG3400E

### HOTLIST GRAPHICS CARD

## PALIT GeForce 6200 TurboCache

RATING ★★★★★

PRICE £40 inc VAT

SUPPLIER [www.scan.co.uk](http://www.scan.co.uk)

DETAILS [www.palit.com.tw](http://www.palit.com.tw)

Until recently, graphics cards that used system memory performed poorly, but the PCI Express interface has changed all that. Palit's GeForce 6200TurboCache uses between 64MB and 256MB of system memory and suffers no loss in performance. At this price, it's an excellent card for anyone who is building a PCI-E system on a tight budget.



**SPECIFICATIONS** nVidia GeForce 6200TC, 64MB (256MB system memory) RAM, PCI-E x16

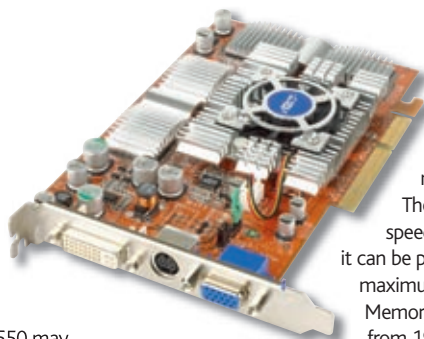
**REVIEW GRAPHICS CARD****ABIT  
R9550 Guru**

RATING ★★★★★

PRICE £54 inc VAT

SUPPLIER [www.scan.co.uk](http://www.scan.co.uk)DETAILS [www.abit.com.tw](http://www.abit.com.tw)

A graphics card based on ATI's Radeon 9550 may not sound like the most exciting thing in the world, and with a Doom 3 score of 13.3fps with full-scene anti-aliasing (FSAA) turned off, Abit's AGP R9550 vGuru would seem to live up to expectations. But this is no ordinary R9550, as it comes with turbo jumper. Switch this over, reinstall the ATI display driver and the card appears as an R9600Xturbo, the next model up in the range. While this offers a small performance increase, it also enables overclocking.



Using the vGuru software provided you can change the core and memory speeds. The default core speed is 284MHz, but it can be pushed to a maximum of 480MHz. Memory can be taken from 196MHz to 320MHz. However, you'll

need a well-ventilated case to stop the card overheating. In our test setup we pushed the card to its maximum settings and, with FSAA turned off, recorded 25.5fps in Doom 3, which is a playable result. The 3DMark03 score went up accordingly, from 2,182 to 3,463. This really is the limit of the card, though, as it has only 128MB of DDR memory and four pixel pipelines.

This is an impressive performance increase – so much so, in fact, that we wish Abit would provide the card in its overclocked state.

While these results are a far cry from the high end of the market, so is the price. At £54 it's one of the cheapest cards around and although it can only just cope with the latest 3D shooters, other games will run much more smoothly.

It's a great card for the undemanding user who wants to play the odd game, provided they're not scared by the thought of overclocking.

David Ludlow

✓ Good performance for the price

✗ Has to be overclocked for the best performance

**SPECIFICATIONS** ATI Radeon 9550, 128MB DDR RAM, AGP interface, DVI-I, D-sub and S-video outputs. **Part code** R9550 vGuru

**REVIEW MOTHERBOARD****GIGABYTE  
GA 8I945P**

RATING ★★★★★

PRICE £107 inc VAT

SUPPLIER Gigabyte 01908 362700

DETAILS [www.gigabyte.com.tw](http://www.gigabyte.com.tw)

As components get faster, new motherboard chipsets are needed to support them. Gigabyte's GA 8I945P motherboard debuts Intel's i945P chipset, a new mainstream product that supports dual-core processors, chips with a faster 1,066MHz front-side bus and 667MHz DDR2 RAM.

The GA 8I945P supports these improvements with its LGA 775 socket and four DIMM slots. It also has four SATA ports, three PCI, two x1 PCI-E



and a x16 PCI-E. The SATA ports can be used to put hard disks in a RAID array for better performance or data protection. There's also the usual complement of USB 2.0 and FireWire ports, Gigabit Ethernet and high-definition eight-channel audio.

We tested it using a 3.6GHz Pentium 4 processor and 1GB of Crucial 533MHz DDR2 memory in a dual-channel configuration. It achieved a score of 145 in our *Shopper* application benchmarks and 5,438 in PCMark04. While these are fast scores, they're slightly slower than those of

Gigabyte's nForce 4-based GA-8N SLI Royal, which we reviewed in *What's New, Shopper* July 2005.

Not only does that board support dual-core processors, 1,066MHz FSB processors and 667MHz DDR2 RAM, it also supports SLI graphics cards and has nVidia's hardware firewall, making it much more flexible.

The GA 8I945P's only advantage is that it's almost £30 cheaper. Even so, we'd rather pay the extra money to get the better-performing, feature-packed nForce 4-based motherboard instead.

David Ludlow

✓ Supports the fastest processors and memory

✗ Not as many features as nVidia's nForce 4 chipset

**SPECIFICATIONS** Intel i945P chipset, LGA 775, 1 x16 PCI-E, 2 x1 PCI-E, 3 PCI, four DDR2 DIMM slots, 4 SATA, 2 IDE. **Part code** GA8I945P

**HOTLIST SOCKET 939 MOTHERBOARD****ECS  
KN1 Extreme**

RATING ★★★★★

PRICE £97 inc VAT

SUPPLIER [www.directfrom.com](http://www.directfrom.com)DETAILS [www.ecs.com.tw](http://www.ecs.com.tw)

Based on nVidia's nForce 4 Ultra chipset, ECS's KN1 Extreme is a high-performance motherboard. Its score of 117 in *Shopper*'s application benchmarks and 4,581 in PCMark04 showed this to be the case.

It has loads of features onboard thanks to nVidia's chipset and costs less than £100, making it the perfect foundation for a high-performance AMD-based computer.



**SPECIFICATIONS** nVidia nForce 4 chipset, supports AMD Socket 939 processor, four DDR memory slots, two LAN ports, 1 x16 PCI-E, 2 x1 PCI-E, 3 PCI, 6 SATA, 2 IDE. **Part code** KN1Extreme

**HOTLIST PROCESSOR****AMD  
Athlon 64 3400+**

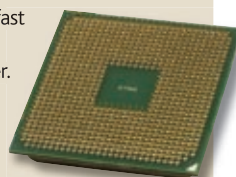
RATING ★★★★★

PRICE £118 inc VAT

SUPPLIER [www.dabs.com](http://www.dabs.com)

AMD's Athlon 64 3400+ on Socket 754 is nearly as fast as a Socket 939 Athlon, and significantly cheaper. Combine it with one of the many cheap Socket 754 motherboards and you can build a powerful computer on a tight budget.

With the release of a 64-bit version of Windows just around the corner, this processor's performance is just going to get better and better.



**SPECIFICATIONS** 2.4GHz clock speed, Socket 754, 2x 800MHz HyperTransport bus. **Part code** ADA3400AXB0X

**HOTLIST LGA775 MOTHERBOARD****ECS  
PF21 Extreme**

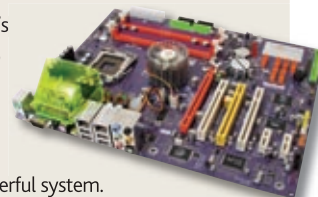
RATING ★★★★★

PRICE £100 inc VAT

DETAILS [www.wirral-it.co.uk](http://www.wirral-it.co.uk)

Featuring Intel's 925XE chipset, ECS's PF21 Extreme motherboard provides the base for a powerful system. It supports 1,066MHz frontside bus (FSB) processors and DDR2 RAM, includes a 54g wireless adaptor and has six SATA ports.

For future upgrade potential you can't go wrong with this board, and it's very good value, too.



**SPECIFICATIONS** Intel 925XE PCI Express chipset, four DDR2 slots, three PCI slots, two IDE ports, six SATA ports, two PCI-E x1 slots, one PCI-E x16 slot







## REVIEW DUAL CORE PROCESSOR

AMD  
X2 4800+

RATING ★★★★★

PRICE \$1,000 (around £600)

DETAILS [www.amd.com](http://www.amd.com)

AMD released its dual-core processor, the Athlon 64 X2, last month as we were going to press. We printed our initial findings then, but this month we've tested the processor in greater detail.

We were provided with an X2 4800+ processor, an Asus nForce 4 SLI motherboard and 512MB of RAM in a dual-channel configuration. As with other AMD chips, the model name is based on the company's Performance Rating (PR). This basically shows that it performs as well as a processor running at 4.8GHz.

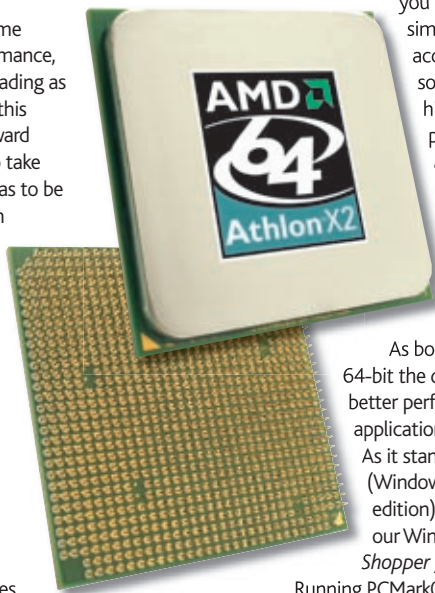
Like Intel's dual-core processor, which we reviewed in *What's New, Shopper* July 2005, the X2 4800+ has two processor cores in one package. In the case of the X2 4800+, both run at 2.4GHz, the same speed as the Athlon 64 4000+. Essentially, you get two Athlon 64 4000+ processors in a single chip.

As the Athlon 64 uses AMD's HyperTransport, the X2 4800+ has an integrated memory controller, which both cores can access. This provides a more efficient and faster mechanism for accessing memory than relying on a Northbridge motherboard chip, as Intel's processor does.

Manufacturing two cores in a single processor is cheaper than making two separate processors, and the motherboards are also cheaper as they need only a single socket. As Microsoft licenses Windows on a per-socket basis, there's also no additional cost for the operating system. In the case of the Athlon 64 X2 range, the chip should work on any Socket 939 motherboard, although you might need to update the BIOS first. This is significantly better than Intel's approach, which requires you to buy a new motherboard with either the 945, 955, or nVidia nForce 4 chipset.

While the processor name gives an indication of performance, in this case it's slightly misleading as judging the performance of this processor isn't a straightforward matter. For an application to take advantage of both cores it has to be multithreaded. A thread is an independent part of an application, usually an individual task. For example, in a video-editing application each thread might apply an effect. Having two cores on a processor means that two threads can be executed simultaneously, improving performance.

However, hardly any software is multithreaded at the moment, so the two cores can't be used to their full extent. As most software uses a single core, the X2 4800+ performs much like a standard Athlon 64 4000+. However, when



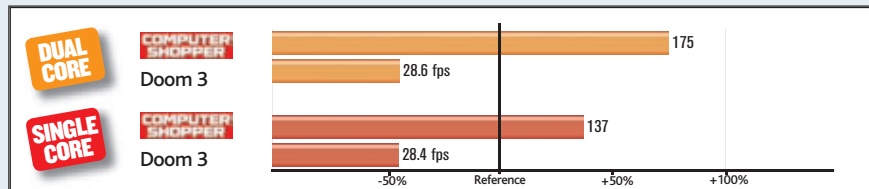
you run two applications simultaneously, each one has access to a physical processor, so both applications run at high speed. With single-core processors, multiple applications have to share a single processor. The end result is that one application grabs the lion's share of the processor time to the detriment of the second application.

As both the X2 4800+'s cores are 64-bit the chip offers the potential for better performance once 64-bit applications are more widely available. As it stands, only the operating system (Windows XP Professional x64 edition) takes advantage of this – see our Windows XP 64-bit feature in *Shopper* July 2005 for more details.

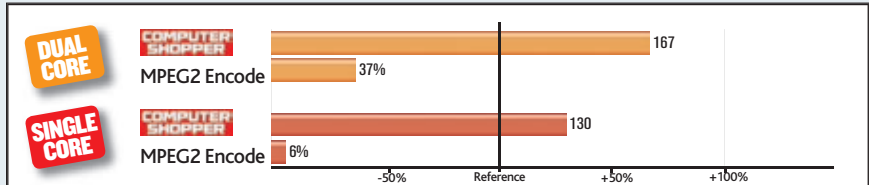
Running PCMark04's processor test, which uses multithreaded content, the X2 4800+ scored 6,538 compared to the Athlon 64 4000+'s 4,446. It's the highest processor score we've ever seen. For a full breakdown on how the X2 4800+ compares

## HOW WE TESTED

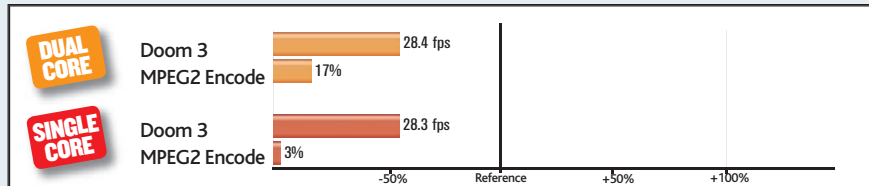
## SINGLE TASK PERFORMANCE



## MULTITASK APPLICATIONS &amp; VIDEO ENCODING



## MULTITASK GAMES &amp; VIDEO ENCODING



To see how AMD's Athlon 64 X2 4800+ processor performed, we compared its results against those of a single-core Athlon 64 4000+. First we ran Doom 3 (using an ATI Radeon X700 graphics card) and *Shopper's* application benchmarks in standalone mode. The X2's *Shopper* result is much better, as our video-encoding test is multithreaded. The single-threaded Doom 3 scores are roughly the same on both processors.

More interesting are our multitasking tests, where we ran the same benchmarks again while simultaneously running a background MPEG-2

encoding test using Max DVD to MPEG Converter 2. While both processors dropped around five per cent of their performance in the *Shopper* test, the dual core encoded a massive 37 per cent of the MPEG-2, while the single core struggled to do six per cent. The Doom 3 test tells a similar story.

With a single-core processor the operating system has to decide which application gets the processor time, and background tasks suffer. With a dual-core processor, the operating system can give each application its own processor core, resulting in two excellent scores.

against a single-core Athlon 64 4000+, see How We Tested (above).

The X2 4800+ costs the same as Intel's Pentium 4 Extreme Edition 840. However, due to its Hyper-Threading technology, which presents Windows with four processors, the 840 scored higher in our application benchmarks. This marks it as the slightly better product in our opinion.

That said, to use Intel's 840 you'll have to buy a new motherboard. If you already have a Socket-939 board, it's highly likely that you'll be able to upgrade to an AMD dual-core system now. Before you rush out, though, bear in mind that it's only worth doing if you already run multithreaded applications or you need to run two applications at once. If neither applies, you'd be better off spending your money on the fastest single-core processor you can afford.

David Ludlow



As fast as two 64-bit PCs; speedy multitasking



Expensive; needs application support

**SPECIFICATIONS** Athlon 64 X2 4800+, two cores each with 2.4GHz clock speed, Socket 939